

Water Lenses

This simple activity allows students to create a different type of magnifying tool. The excitement of this activity comes not only from what they'll see through the magnifier, but from what they'll notice about magnification through the creation process.

What You Need:

for each student:

- a small piece of newspaper with text on it

for groups of 3-5 students:

- a teaspoon sized portion of Vaseline™ Petroleum Jelly
- a cup of water
- an eyedropper

for the class:

- at least one magnifying lens for display
- other types of lenses, if you have any available (for instance: an eyeglass lens, a camera lens, or a part of a telescope or microscope)

To Get Ready:

Put teaspoon-sized portions of Vaseline on small pieces of paper or in small plastic cups.

Cut or tear newspaper into smaller pieces approximately 3 inches square, one per student. (Be sure that each piece has regular sized print on it and that the content is appropriate.)

Fill cups with water, one per group of 3-5 students.



To Start, Ask:

Have you ever used a magnifying glass? What happens to objects when they're viewed through a magnifier? Have you ever noticed the shapes of magnifying lenses? Are they flat? square? hard? soft? What are the characteristics of lenses which magnify?

Now, Try It:

- After asking the introductory questions, show the class the different lenses you've brought. Invite them to list the characteristics they see. Let them know that this activity will give them a chance to make their own lenses and come to some new conclusions about the characteristics of lenses.
- Divide your class into groups of 3-5 children and ask them to sit close together to share materials.
- Briefly explain the instructions for making a "Vaseline magnifier" before passing out the materials. (Instructions follow here.)

- Pass out all of the materials and let them go to it.
- Once they've made one lens, encourage students to experiment to find out what makes the Vaseline™ lens work. Invite them to vary the size of the water drops or try it without the Vaseline.

To Make Vaseline™ Lenses:

- Smear a very thin layer of Vaseline™ over a portion of print on the newspaper (a one inch square is a good size).
- Use the eyedropper to put a single drop of water onto the thin layer of Vaseline™.
- Look through the Vaseline™ lens which has been created. How do the letters underneath look? Are they different when compared to the other words on the newspaper piece?
- Try adding more water to the lens. What happens? Try using a smaller drop of water. What happens?
- Could you create a lens on the newspaper without using the Vaseline™? What would happen? Try it.



Ask Students Again:

In what ways are magnifying lenses and Vaseline lenses similar? How are they different? What does this tell you about the characteristics of magnifying lenses?

If You Want to Try More:

Fill a cylindrical jar with water and look through the jar at some letters. Then fill a clear square container with water, and look through it to the other side. Do you notice any differences?



Scientist Spotlight:

Microbiologists are scientists who find out about tiny organisms, such as algae, bacteria, and plankton. In their work, microbiologists use powerful microscopes which magnify the objects in view at least 1000 times. Finely ground glass, rather than Vaseline and water, are used to create the lenses in high-powered microscopes.

Optical engineers design microscopes, telescopes and cameras. As they design, they must have a good understanding of the shapes, sizes, and magnification needed to use lenses in the most effective way.

Assess What Happened

Using the Field Journal Entry sheet (on p. i), invite students to respond to the following question. Be sure to add this one to the scientific field journals.

How did the lens work differently with smaller and larger drops of water? What do you think might have happened if you used salt water instead of tap water to create the lens?

